DOCUMENT RESUME

ED 462 598 CE 083 050

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TITLE What Happens after They Graduate? Results from a Longitudinal Study of STC Graduates.
PUB DATE 2001-12-00
NOTE 15p.; Paper presented at the Annual Conference of the Association for Career and Technical Education (75th, New Orleans, LA, December 13-16, 2001).
PUB TYPE Numerical/Quantitative Data (110) -- Reports - Research (143) -- Speeches/Meeting Papers (150)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Comparative Analysis; Corporations; *Education Work Relationship; *Educational Attainment; Employment Level; Employment Patterns; Enrollment Trends; *Graduate Surveys; Graduates; Longitudinal Studies; *Manufacturing Industry; Models; *Outcomes of Education; Parents; Partnerships in Education; Postsecondary Education; School Business Relationship; Unions; *Vocational Education

ABSTRACT

The Lansing Area Manufacturing Partnership (LAMP) is an academically rigorous, business/labor-driven school-to-career (STC) program in Lansing, Michigan, that includes business, union, school, and parent partners. The effects of participation in LAMP on transitions from school to higher education and work were examined in a longitudinal study of 48 LAMP participants and 46 students who did not participate in LAMP. Both groups were similar from the standpoints of gender, race, age, grade-point average (GPA), and school attended. Data were collected from both groups 6, 12, and 18 months after graduation. The following were among the key findings: (1) postsecondary enrollment was higher among the LAMP participants (96% versus 79%) in March 2000, whereas both groups had nearly identical postsecondary enrollment rates (about 79%) in winter 2001; (2) the average GPA of the non-LAMP students remained marginally higher than that of the LAMP graduates throughout the study; (3) little difference in the two groups' employment rates was found; (4) 16 months after graduation, LAMP graduates hourly wage averaged $11.27 versus $8.49 for the non-LAMP participants; (5) LAMP appeared to better prepare students for the challenges and responsibilities of work; and (6) LAMP graduates pursued career-enhancing opportunities at higher rates than non-LAMP graduates did. (Contains 14 references.) (MN)

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What Happens After They Graduate?

Results from a Longitudinal Study of STC Graduates

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Presented at the Association for Career and Technical Education Annual Conference, New Orleans, LA December 13-16, 2001

Abstract

School-to-career (STC) initiatives aim to help students transition to productive adult careers either directly from secondary school or via post-secondary training and education. To date, however, few studies have tracked important educational and employment outcomes that occur post-high school graduation.

Employing a comparative longitudinal design, this study tracked the progress of graduates from LAMP, a sophisticated STC initiative in Michigan, and a matched comparison sample. Both samples are contacted twice a year following graduation and are asked to report on such measures as educational and employment status and career plans. The main objective of this research is to examine the relative advantage of participation in LAMP on transitions from school to higher education and to work.

Two years into this five-year study, analyses indicate that LAMP students have an advantage over their Non-LAMP counterparts. LAMP students are enrolling in post-secondary education at rates higher than the comparison group, they are doing a better job at sustaining enrollment, and they report being better prepared for the post-secondary school environment. LAMP students are more active than their Non-LAMP counterparts in seeking career development opportunities such as researching career goals, obtaining work experience, exploring further training or graduate school, and preparing for entrance exams. LAMP students have achieved higher levels of compensation from their jobs and report being better prepared for the challenges and responsibilities of the work environment. Additional longitudinal research is required to determine if the advantages that accrue to LAMP students are common to graduates of STC initiatives more broadly.

What Happens After They Graduate?
Results from a Longitudinal Study of STC Graduates

Introduction

In its often cited 1983 report entitled 'A Nation at Risk,' the National Commission on Excellence in Education charged the sub-par occupational preparation of American students as the culprit for economic instability in the United States. Indeed, much of the blame in past years has been placed on the education system for failing students by isolating them from the labor market and for not adequately building linkages between the classroom and the workplace (GAO, 1990). Employers have been equally under fire for not providing 'career ladder' jobs with adequate training, pay, and benefits. The largest response from education policy makers came in the form of the School-to-Work Opportunities Act of 1994 (STWOA) which provided $1.6 billion in seed money to support career development initiatives that included internships, career academies, job shadowing, and financial assistance to individual states. As the program is now sunsetting after seven years of federal support, much remains unknown about the effectiveness of its mission to better equip America's youth for the labor force.

Since the passage of the STWOA, communities in all fifty states have implemented school to career (STC) initiatives. National studies have found that the number of schools offering STC has grown dramatically, as have the number of students participating in STC (Hughes, Bailey, and Mechur, 2001). In addition, the essential elements of STC -- work-based learning, project-based learning, and applied academics, which have a rich tradition in career and technical education -- are being implemented in a growing number of academic classrooms.

STC is premised on the notion of helping students make the transition to productive adult careers either directly from secondary school or via post-secondary training and education. The true test of this educational approach therefore lies in tracking the trajectory of STC graduates through post-secondary educational experiences and into their early careers. Proponents of career and technical education, educational reform advocates, school administrators, employers, organized labor, parents, and especially students all share a vested interest in establishing the effectiveness of the STC approach (The Public Policy Forum, 2000). While much research has been conducted, outcome data have tended to be limited to short-term results. The need to document long-term results is clear.

What we know and don't know about STC

Numerous studies, including national studies undertaken by Hershey et al. (1999), Kemple et al. (1999), and MPR Associates (1998) have reported on student outcomes. The results of these evaluations and others have generally shown that students in STC

programs have better attendance rates (Bishop et. al., 2000), spend more time doing homework (Kelch, 1998), take more challenging courses (Bishop et al., 2000), and obtain higher GPAs (Hanser and Stasz, 1999), while at the same time are less likely to be suspended from school (JFF, n.d.) or drop out of school (Kemple et al., 1999). By and large, however, the research has focused on students while they were still in STC programs.

Given these results, one would expect the post-graduation outcomes of STC students to be equally impressive. To date, however, few studies have tracked important educational and employment outcomes that occur post-high school graduation. Only a handful of cross-sectional follow-up studies have been undertaken. One post-graduation finding that has been consistently cited is that STC students are just as likely to attend college as other students. Indeed, several studies have shown that they are even more likely to do so (Maxwell and Rubin, 2000; Metis Associates, 1999). A comparative follow-up study of Boston's Pro Tech graduates offers some of the most compelling data available. In contrast to a comparison group, Pro Tech students were found to attend and graduate from college at higher rates, were more likely to be employed, and were more likely to have higher wages (JFF, n.d.).

The true test of a STC initiative's success is not measurable immediately upon completion of the program, but rather throughout the transition to adulthood. In order for policy makers and program sponsors to enact sound initiatives that cater to the educational needs of both students and businesses, there needs to be a thorough body of research to support the claim that STC results in smoother transitions to productive adult careers. The future of educational reform requires a better understanding of the relative and long-term effects of participation in STC programs. Our study contributes to this nascent research base.

Research methods and procedures

We examined a fairly sophisticated STC model that explicitly sought to build partnerships among business, labor, education, and parents. That model is known as the Lansing Area Manufacturing Partnership (LAMP). Partners include business (General Motors Corporation), organized labor (United Auto Workers), the school district (Ingham Intermediate), and the parents and guardians of the participating students.

Now entering its fifth year of operation, LAMP is well on the way to establishing itself as a model STC initiative. With its focus on career development, LAMP is distinguished by an academically rigorous business/labor-driven curriculum, an emphasis on project-based learning, a team teaching structure, and extensive opportunities for staff and students to maintain close, ongoing interaction with workplace employees. Students participate in a variety of classroom and work-based learning experiences designed for

practical skill development and career development (cf. MacAllum et al., 1999). During their senior year, students spend half of each school day in this unique learning environment.

A longitudinal survey design was employed to examine the ongoing influence of the LAMP program on participants. The data were collected from LAMP 1999 graduates as well as a comparison sample at three different points in time: Winter 2000 (six months after graduation), Spring 2000 (12 months after graduation), and Winter 2001 (18 months after graduation).[1] The comparison sample was constructed by matching LAMP students one-to-one with comparable non-LAMP students based on gender, race, age, GPA, and school attended. The surveys are scheduled to continue twice a year until June 2004; the results presented here are thus preliminary in nature. As of Winter 2001, the response rate was approximately 92.2%. Descriptive statistics on demographic variables for both samples are presented in Table 1.

Table 1: Sample Demographics

	LAMP	Non-LAMP
Gender		
Female	43.8%	45.7%
Male	56.3%	54.3%
Race/Ethnicity		
African American	12.5%	17.4%
Asian American	2.1%	2.2%
Latino/Hispanic	8.3%	4.3%
White	72.9%	76.1%
Other	4.2%	0.0%
Graduated from High School		
Yes	100.0%	95.7%
No	0.0%	4.3%
Senior Year GPA	3.30	3.29
Sample Size	48	46

An optimal research design would involve random assignment to either the LAMP program or to the comparison group. Due to the nature of the LAMP project, this is not possible. Admission into the program is by application and due to financial constraints, only about 50 applicants are able to participate. Because students are not randomly selected into either the LAMP or comparison samples and due to the sample size limitations, we cannot make use of inferential statistics to make claims about the larger STC community. We instead use descriptive statistics to make comparisons between the two groups in order to understand the differences between participants and non-participants in a STC program. Specifically, we test the following hypotheses:

H_1: *LAMP graduates have higher enrollment rates in post-secondary education than Non-LAMP graduates.*

[1] The full study is also tracking graduates from 1998 and 2000. Here, we present only findings from the Class of 1999 because we have no comparison group data for the Class of 1998 and it is too soon after high school graduation to show longitudinal trends for the Class of 2000.

H_2: *LAMP graduates have greater persistence in post-secondary education than Non-LAMP graduates.*

H_3: *LAMP graduates are better prepared for the post-secondary school environment.*

H_4: *LAMP graduates perform better academically than Non-LAMP graduates.*

H_5: *LAMP graduates have higher employment rates than Non-LAMP graduates.*

H_6: *LAMP graduates will have greater remuneration from their jobs.*

H_7: *LAMP graduates are better prepared for the world of work.*

H_8: *LAMP graduates pursue career-enhancing opportunities at higher rates than Non-LAMP graduates.*

Results

H_1: *LAMP graduates have higher enrollment rates in post-secondary education than Non-LAMP graduate.*

H_2: *LAMP graduates have greater persistence in post-secondary education than Non-LAMP graduates*

In qualitative interviews conducted early in the project, LAMP students reported that one reason they applied to the program was that it served as a good college preparatory experience. Did the program successfully serve to prepare students for the post-secondary school transition? If so, we would expect LAMP graduates to have higher enrollment rates and more stable post-secondary careers than the control group. We tested these hypotheses by looking at patterns of enrollment across all three survey administrations. Enrollment rates were calculated by dividing the number of students enrolled in either a two year college, a four year college, a technical school, or apprenticeship program over the total sample size. Results for both groups are presented in Figure 1.

Figure 1: Post-Secondary Enrollment Rates

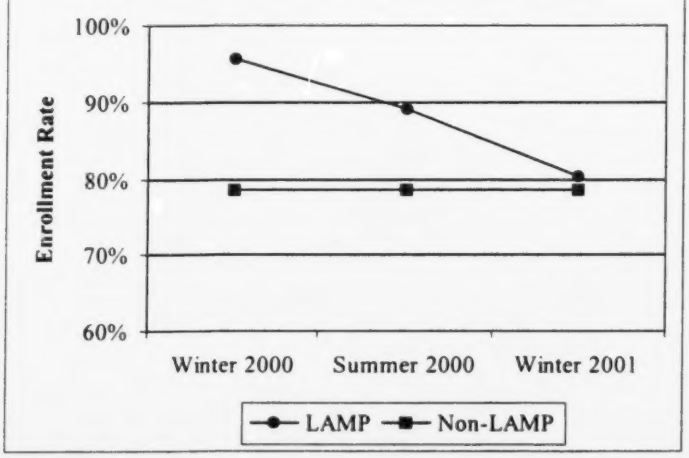
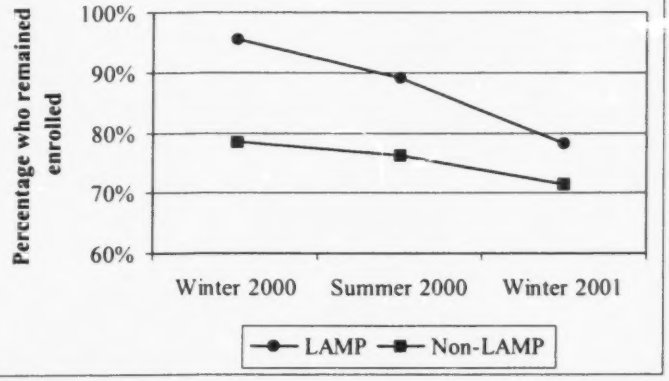


Figure 1 shows that the Non-LAMP group maintains a

steady enrollment rate of 79% for all three time periods. In contrast, the LAMP graduates begin with a much higher enrollment rate of 96%. This advantage, however, monotonically diminishes. By the time they are 18 months out of high school, the rates for both groups are nearly identical - suggesting that the LAMP program gave students an initial boost that dissipated over time.

Enrollment rates, however, are crude measures in that they show only those who are enrolled at a given time point - regardless of whether or not they were previously enrolled. If participating in LAMP served as a good college preparatory experience, we anticipate that that LAMP graduates would exhibit greater persistence in post-secondary education. To test this, we first looked at the percentage of students who began enrollment immediately after high school and calculated the percentage who continued their education without interruption. The results are presented in Figure 2.

Figure 2: Persistence in Post-Secondary Education



Not only are a larger number of LAMP graduates enrolled in post-secondary education immediately following high school, a greater proportion are remaining enrolled without interruption. However, there is a narrowing between the groups across time. Future waves will reveal if this trend will persist or if LAMP students will maintain an edge. With respect to the first two hypotheses, LAMP students have a large post-secondary enrollment advantage over the control group immediately after high school, but there is no difference between the groups 18 months post-graduation. Although the enrollment trends have converged, LAMP students exhibit greater persistence in pursuing post-secondary education.

H_3: *LAMP graduates are better prepared for the post-secondary school environment.*

In the first follow-up survey, students were asked: "Using a scale of 1 to 10, 1 being 'not at all' and 10 being 'extremely,' how prepared were you to face the social and environmental changes in your post-secondary education?" The respondents then had to rate their degree of preparation on seven aspects of post-secondary life. Means and standard deviations are shown in Table 2.

Table 2: Means and Standard Deviations on Items That Indicate Preparation for the Post-Secondary School Environment

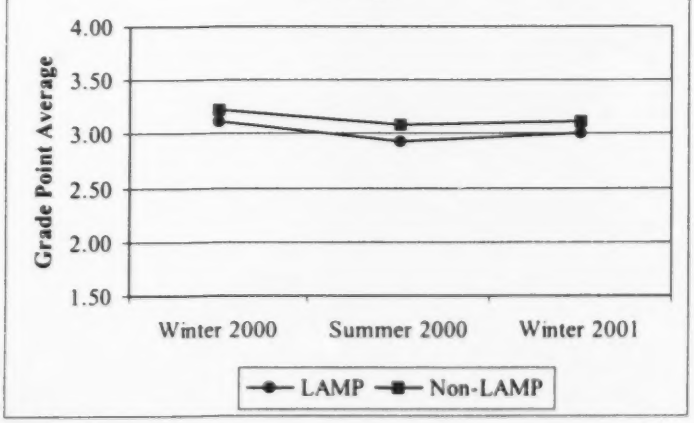
	LAMP		Non-LAMP	
	mean	s.d.	mean	s.d.
Following directions	9.04	1.17	8.92	1.48
Working collaboratively with other students	8.71	1.39	8.56	1.50
Meeting new people/making friends	8.67	1.43	8.22	1.44
Interacting with faculty, staff, & other adults	8.40	1.68	7.94	1.77
Adjusting to new environment/way of doing things	8.36	1.54	7.81	2.05
Finding & using information from multiple sources	8.04	1.69	7.06	1.76
Handling course work and class assignments	7.78	1.64	7.61	1.98

On all seven items, the means for the LAMP sample are higher than the means for the control group. The largest differences on the seven items exist for 'Finding and using information from multiple sources' and 'Adjusting to the new environment and new ways of doing things.' The smallest differences are for 'Following directions' and 'Working collaboratively with other students.' Although the differences on any single item are not large, that the LAMP graduates report better preparation on all items suggests that they have some leverage over the control group in terms of being equipped for the requirements and challenges of post-secondary school life.

H_4: *LAMP graduates perform better academically than Non-LAMP graduates.*

So far we have seen that LAMP graduates are more persistent in their pursuit of a post-secondary degree and that they are better prepared for the college environment. How, then, are they performing academically? As mentioned earlier, both the LAMP and the control groups were matched on GPA, gender, race, age, and school attended. The demographic statistics in Table 1 show that as of their senior year in high school, the groups had essentially the same GPA (LAMP 3.30; Non-LAMP 3.29). To see if this trend persisted once in college, we compared the GPAs of both groups across all three survey administrations. The results are presented in Figure 3.

Figure 3: Post-Secondary Grade Point Average



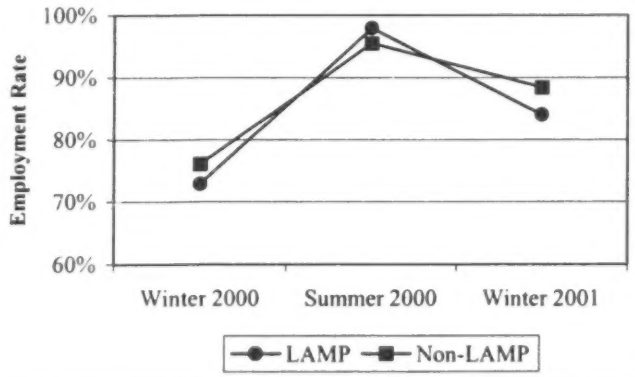
As shown here, the Non-LAMP students have marginally higher GPAs than the LAMP students. There is a slight drop for both groups in the Spring of 2000, but they both rebound the following winter. These data indicate that there is not a discernible difference in the academic performance between the groups. Both groups have sustained roughly a B average.

H_5: *LAMP graduates have higher employment rates than Non-LAMP graduates.*

H_6: *LAMP graduates will have greater remuneration from their jobs.*

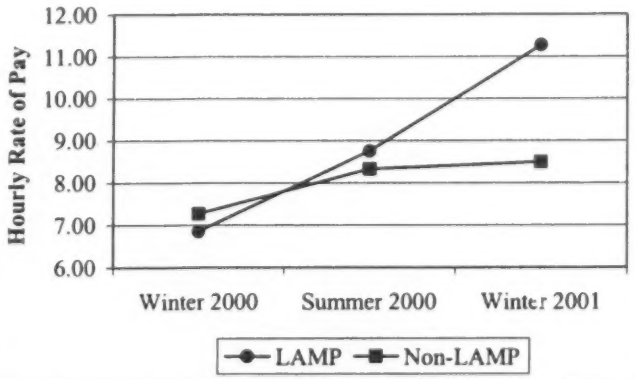
In all three surveys, we asked the respondents about their employment status and their rate of pay. The trends in responses for both questions are presented in Figures 4 & 5.

Figure 4: Employment Rates



The figures show two separate trends with respect to employment. First, there is little difference in actual employment rates. The control group has slightly higher rates during the winter survey administrations while the LAMP graduates exhibit higher rates during the summer. Higher proportions of both groups are employed in the summer months, which is most likely due to increased availability of time upon the conclusion of the spring semester. Second, although employment rates for both groups are comparable, LAMP graduates reap greater financial rewards from their jobs. During the first six to twelve months out of high school, there is not much difference between the groups. However, once they are both 16 months out of high school, LAMP graduates make an average of $11.27 an hour while Non-LAMP graduates make only $8.49 an hour. Although our hypothesis about employment levels is not supported, our data show that LAMP graduates are faring better in the labor market with respect to wages.

Figure 5: Mean Hourly Rate of Pay



H_7: *LAMP graduates are better prepared for the world of work.*

Proponents of the program hoped that the training and experiences gained in LAMP would prepare high school students for the challenges and responsibilities that they would face in any job situation. In order to test out this hypothesis, we looked at a question from the six month follow-up survey which asked: "Using a scale of 1 to 10, 1

being 'not at all' and 10 being 'extremely,' how prepared were you at the time you took your first job out of high school?" The respondents then had to rate their degree of preparedness on eight aspects of workplace culture. Means and standard deviations for both groups are presented in Table 3.

Table 3: Means and Standard Deviations on Items That Indicate Preparation for the World of Work; Six Months After High School Graduation

	LAMP		Non-LAMP	
	mean	s.d.	mean	s.d.
Working on a team	9.11	1.22	9.17	1.15
Taking responsibility	8.97	1.26	8.51	1.50
Taking initiative	8.94	1.19	8.57	1.93
Asking questions/asking for help	8.91	1.49	8.89	1.13
Using time efficiently	8.69	1.14	7.97	1.71
Planning time wisely	8.46	1.44	8.11	1.69
The world of work in general	8.43	1.76	7.71	1.96
Understanding the culture of the workplace	8.17	1.91	7.74	1.99

Except for preparation for 'Working on a team,' the means for LAMP graduates are higher than those for the Non-LAMP graduates. The largest differences exist for preparation for 'Using time efficiently' and 'The world of work in general.' These findings lend initial support to our hypothesis. It is possible, however, that tenure in the work force may attenuate some of the initial advantages that LAMP graduates hold. In order to see if the differences remain after time, we examined responses to an almost identical question asked of both samples 18 months out of high school. The only difference in the question wording is that instead of reporting preparation for one's *first* job out of high school, the respondents were asked to report preparation for their *current* job. Means and standard deviations for both groups are presented in Table 4.

For every item, the means for LAMP graduates are higher than the means for Non-LAMP graduates. Not only are LAMP graduates better prepared for work, but extended time in the work force does not reduce their advantage over the control group. This suggests that job preparedness skills gained in the LAMP program have an ongoing influence on the participants.

Table 4: Means and Standard Deviations on Items That Indicate Preparation for the World of Work; Eighteen Months After High School Graduation

	LAMP		Non-LAMP	
	mean	s.d.	mean	s.d.
Working on a team	9.48	0.82	8.95	1.42
Taking responsibility	9.17	1.06	8.82	1.34
Taking initiative	8.90	1.27	8.87	1.33
Asking questions/asking for help	8.95	1.25	8.90	1.34
Using time efficiently	8.88	1.22	8.51	1.41
Planning time wisely	8.57	1.35	8.23	1.75
The world of work in general	8.74	1.29	7.85	1.93
Understanding the culture of the workplace	8.76	1.25	8.51	1.74

H_8: *LAMP graduates pursue career-enhancing opportunities at higher rates than Non-LAMP graduates.*

In addition to preparing students for the challenges and responsibilities of the work environment, designers of the program sought to enhance the participants' connection to the labor market by giving them the tools to navigate their way through school-to-work transitions. One avenue by which students accomplish this is by seeking and capitalizing on career-enhancing opportunities. Since graduating from high school, has the LAMP sample sought to enhance their skills and marketability at higher rates than the control group? To answer this, we looked at a question that asked both samples what they had completed in the previous six months to help them obtain their goals. We pooled the responses from both survey administrations. The results are presented in Table 5.

Table 5: Activities Completed to Help Obtain Goal; Pooled Responses from Six Month & Eighteen Month Surveys

	LAMP	Non-LAMP
Explored further education opportunities	62.3%	48.5%
Researched an occupation	61.0%	53.7%
Gained specific work experience	45.9%	39.0%
Prepared for an entrance exam	33.6%	14.7%
Completed an informational interview	24.0%	14.7%
Explored graduate schools	17.2%	11.7%
Other possible steps completed	11.0%	6.0%
Obtained an internship	7.5%	7.3%

The statistics support our hypothesis. Except for the proportions who have obtained an internship, LAMP graduates have indeed pursued career enhancing opportunities at higher rates than have Non-LAMP graduates. Twice as many LAMP graduates had prepared for an entrance exam than had Non-LAMP graduates. More of the LAMP sample (13.8%) has explored further education opportunities than have members of the control group, and almost 10% more of the LAMP sample have completed an informational interview than the control group. These findings suggest that STC initiatives gear students towards life-long learning.

Conclusion

Unlike cross sectional research designs in which data are collected at a single point in time, our longitudinal approach attempts to model the impacts of the LAMP program throughout the students' transition to post-secondary life. Our main concerns are with their adaptation to and success in college and in the work force. The central question that we seek to answer is: What effect did involvement in the LAMP initiative have on the participants' transition from school to work? Even at this interim phase of the study, we are able to detect indications that LAMP graduates have an advantage over their Non-LAMP counterparts.

Although LAMP's focus is primarily career related, our data show that program graduates are exhibiting success in the college classroom. LAMP graduates are initially enrolling in post-secondary education at rates higher than the comparison group, they are doing a better job at sustaining enrollment, they are better prepared for the challenges and demands of the overall college environment, and their grades are comparable with Non-LAMP graduates. At this point in time, LAMP graduates are only 18 months out of high school, yet our statistics reveal that they are better compensated for their jobs, better prepared for the world of work, and more apt to seek career enhancing opportunities.

Our findings, however, should be taken with a note of caution, as it is quite possible that the initial leverage the LAMP graduates have may disappear as program participation recedes further behind them. Employment after high school in conjunction with the experience of attending college may attenuate the original influence of participating in LAMP. Also, it is important to keep in mind when interpreting the results that participation in LAMP follows 11 years of prior education and experiences which have undoubtedly shaped the students' goals, academic aspirations, and orientation towards work long before their involvement in a STC program. We would not expect large differences between the groups considering that over 95% of their educational experiences were essentially the same.

Implications and recommendations

Taken as a whole, our findings indicate the overall success of the LAMP program; LAMP graduates are better prepared for both college and employment. Their STC experiences appear to have given them an advantage in navigating the transition to higher education and into the early stages of their careers. By extension, STC initiatives that offer similar experiences to LAMP are likely to provide similar advantages to their graduates. Indeed, our data are consistent with existing follow-up research (Maxwell and Rubin, 2000; Metis Associates, 1999; JFF, n.d.), but more longitudinal studies are needed to fully test the benefits of STC. Large scale studies that track high school graduates with a variety of STC experiences would be especially valuable.

It is still early in the LAMP graduates' transition to full adulthood, and in some ways, this interim analysis raises more questions than it answers. How many will complete their post-secondary programs? What careers will the LAMP graduates pursue when they complete their post-secondary education? What effect will contemporary job experiences and changes have on the pursuit of career goals? Will there be any measurable differences in the wages, benefits, and responsibilities of LAMP graduates and those of the comparison group? It is our hope that these and other important questions relating to career advancement will be answered through the ongoing study of the LAMP graduates.

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